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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/620,718	07/20/2000	Jiro Matsufusa	50006-070	3318

7590 05/21/2003

McDermott Will & Emery
600 13th Street NW
Washington, DC 20005-3096

EXAMINER

PERALTA, GINETTE

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 05/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/620,718

Applicant(s)

MATSUFUSA ET AL

Examiner

Ginette Peralta

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 3/3/03.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Chen et al. (U. S. Pat. 6,118,185).

Applicant's admitted prior art teaches in pages 1-3, a semiconductor device having a test mark that comprises a semiconductor substrate 21, a first TEOS layer 22 formed on the semiconductor substrate, a second TEOS layer 23 formed on the first TEOS layer 22 and having a lower fluidity than that of the first TEOS layer 22 at an elevated temperature, a recess formed in the first and second TEOS layers and exposing the surface of the semiconductor substrate, wherein the horizontal cross section of the recess is substantially rectangular in configuration, wherein the first TEOS layer contains boron and phosphorus.

Applicant's admitted prior art teaches all the limitations in the claims with the exception of a metal layer formed on the first TEOS layer and opposing the corner of the recess.

Chen et al. teaches in fig. 14 a semiconductor device having a semiconductor substrate, that has a recess configuration on which a metal layer 92 is formed on an insulating layer 17 and opposing to the corner of the recess 3 which has a substantially square or rectangular configuration, wherein there is an outer metal layer formed outside of the metal layer 83 so that the outer metal layer opposes the corner of the alignment mark, and wherein the metal layer 83 is embedded in the insulating layer that extends between the top and bottom surfaces of the substrate, wherein the metal layers are used for the disclosed intended purpose of providing a structure that makes the mark on the wafer easier to identify and to eliminate the tendency for the outer box to be broken in critical places.

Thus, it would have been obvious to one of ordinary skill in the art to use a box-in-box configuration as the one taught by Chen et al. in the area surrounding a test mark area as taught by the Applicant's admitted prior art for the disclosed intended purpose of improving the identification of the test mark in the wafer patterning. Furthermore, it would have been obvious to one of ordinary skill in the art to form the metal layer having a variety of shapes as it would not yield any unexpected result, and the purpose of a better identification of the test mark would be accomplished and the tendency for the outer box to be broken in critical places will be largely eliminated.

Response to Arguments

3. Applicant's arguments filed 3/3/03 have been fully considered but they are not persuasive. Regarding applicant's argument that the alignment mark formed by the

smaller box 3 in Chen et al. does not correspond to a recess formed in first and second TEOS layers and exposing the surface of the semiconductor substrate, it is noted that the features 2 and 3 denote hollow boxes formed in the first and second levels of the structure, it is further noted that the boxes are used to ensure perfect registration between masks, by four box-in-box alignments, thus box or recess 3 is indeed an alignment mark as taught in col. 1, ll. 25-41.

Regarding applicant's argument that there is no motivation to combine, it is noted that the combination as disclosed by Chen et al. is to obtain a structure that facilitates the identification and the proper alignment during an alignment procedure in a semiconductor fabrication process and furthermore, Chen et al. discloses in col. 3, lines 9-11, that another purpose of the invention is to eliminate the tendency for the outer box to be broken in critical places.

In response to Applicant's argument that the claimed invention relates to "a semiconductor device having test mark which prevents extension of a crack arisen at the corner of a recess", the fact that Applicant uses a metal layer for a different purpose does not alter the conclusion that its use in a prior art device would be prima facie obvious from the purpose disclosed in the reference." In re Lintner, 173 USPQ 560.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ginette Peralta whose telephone number is (703)305-7722. The examiner can normally be reached on Monday to Friday 8:00 AM- 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703)308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

GP
May 16, 2003

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